The Olentangy River Wetland Research Park: 1998 Progress

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Introduction

This report represents the seventh annual report submitted to the University on research at the Olentangy River Wetland Research Park (ORWRP). It also represents a summary of the fifth year of actual hydrologic operation of the two experimental wetland basins on the site and the second year of progress on a new 7-acre wetland. Considerable improvement in infrastructure was also completed in 1998 and the Sandefur Wetland Pavilion, since completed in 1999, was started in 1998.

Why a Wetland Research Park?

Wetlands are shallow to intermittently flooded ecosystems that are more commonly known by such terms as swamps, bogs, marshes, and sedge meadows. They are revered as important parts of the natural landscape because of their functions in cleaning and retaining water naturally and in providing a habitat and food source for a wide variety of plant and animal species. It is estimated that more than half of the original wetlands in the lower 48 states have been lost to drainage projects and human development projects. Ohio has lost more than 90 percent of its original wetlands.

When we lose wetlands, we lose their ability to provide clean water, prevent floods and enhance biological diversity. Many organizations are calling for construction of new wetlands to clean up our streams, rivers, and lakes. The National Academy of Sciences has called for the restoration and creation of 10 million acres of wetlands in the United States by the year 2010.

We need to know: 1) how wetlands work; 2) if we can create and restore them; and 3) the best approaches to creation and restoration of wetlands. The Olentangy River Wetland Research Park is designed to be a long-term, large-scale wetland research facility on a major college campus. There is no other facility of its kind on any other campus in the USA.

Progress at OSU's Wetland Site

The Olentangy River Wetland Research Park is located on a 22-acre site owned by Ohio State University, immediately north of Dodridge Road and adjacent to the Columbus campus (Figure 1). The site is being developed in three phases:

Phase 1 — Construction of two experimental wetland basins and their water delivery system;

Phase 2—Development of a research and teaching infrastructure at the site including boardwalks, experimental mesocosms, a plant-material greenhouse, additional wetlands, instrumentation for long-term research, and a visitor pavilion; and

Phase 3—Development and construction of a research/teaching building on the site.

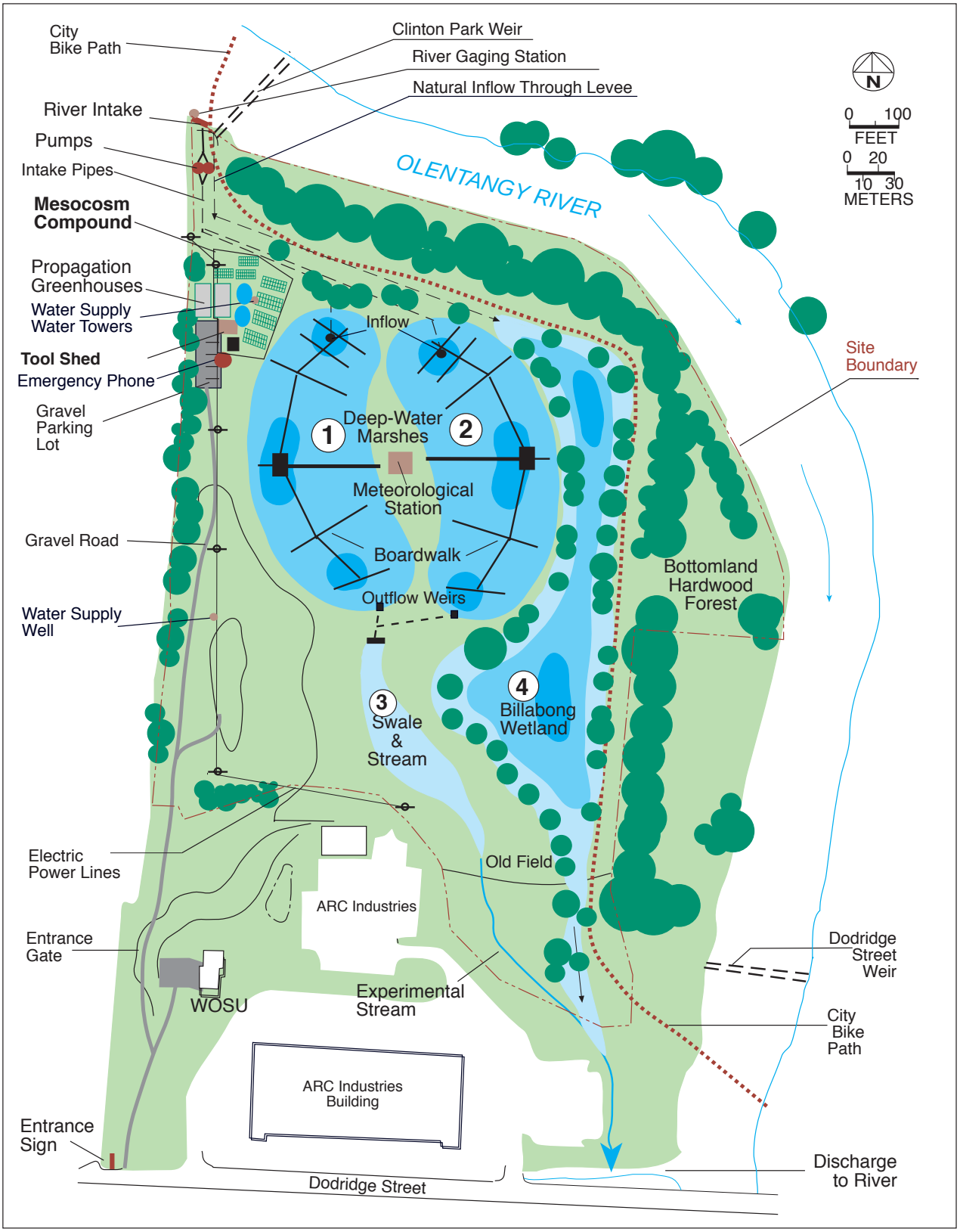
Phase 1 of site development, which featured construction of two 2.5-acre deepwater marshes and a river water delivery system, was completed in 1994. Pumps were installed on the floodplain to bring water from the Olentangy River to the wetlands and pumping officially began on March 4, 1994. River water is pumped continuously, day and night, into the two wetlands. It then flows by gravity back to the Olentangy River through a swale and constructed stream system. In May 1994, one wetland basin was planted with marsh vegetation typical of wetlands in the Midwest; the other remained as an unplanted control. This has become the major full-scale "Experiment" at the site.

Phase 2, establishing the infrastructure for research and education of the site, began in 1994 and is almost complete. The status of the site at the end of 1998 is illustrated in Figure 2. The only major task of Phase 2 that remained at the end of 1998 was completion of a visitor's pavilion as a focus location for tours and permanent interpretative materials and completion of a plant material greenhouse (completed in 1999). A donation has been given to this project and design of the pavilion was well underway at year's end.

The Bottomland Mitigation Project

Personnel of the ORWRP worked with the Ohio Department of Transportation (ODOT) and OSU Office of Legal Affairs to develop a mitigation strategy for wetland loss that resulted from a highway construction project (Spring-Sandusky interchange) in downtown Columbus. A mitigation plan was developed in collaboration with ODOT and the U.S. Army Corps of Engineers approved the plan. The plan at the ORWRP calls for the restoration of approximately 13 acres of bottomland forest along the north and east sides of the ORWRP (see Figures 1 and 2) by reintroducing floodwaters through the artificial levee built on the river decades ago. The levees will have channels cut into them. With the completion of the conservation easements in the bottomland forest, land available to the ORWRP for research will expand to about 30 acres.

Figure 1. Aerial photograph of Olentangy River Wetland Research Park, just north of the Ohio State campus, from August 1998.



OLENTANGY RIVER WETLAND RESEARCH PARK

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COLUMBUS, OHIO

END OF 1998

Figure 2. Progress at the Olentangy River Wetland Research Park through December 1998. Phase 1 is completed and Phase 2, establishment of teaching and research infrastructure, is almost complete.

Bike Path

Construction on the Olentangy River bike path through the ORWRP site was completed in 1998 (Figure 3). The project was a combined effort of the city of Columbus and ODOT. Two bridges were constructed and the 10-ft wide asphalt bike path crosses across the northern edge of the site and then north and south on the eastern edge of the new billabong wetland. The use of the bikepath by the public has increased by several orders of magnitude the number of Columbus residents passing through the wetland site. Their comments to us suggest that they are very pleased that the University has such a beautiful nature reserve as the ORWRP. Signs were installed along the bike path welcoming visitors to the wetlands. When the bike path was being constructed, the contractors kindly constructed an exit ramp from the bike path to the parking lot at the ORWRP for visitors to easily access the newly constructed wetland pavilion.

Sandefur Wetland Pavilion

A major new development at the Olentangy River Wetland Research Park in 1998 was the beginning of construction of a wetland pavilion for site visitors. A generous donation by John and Tana Sandefur in 1997 led to plans for the two-story observation deck (Figure 4), that now serves as a starting point for guided wetland tours. Groundbreaking occurred on October 16, 1998 with OSU President Brit Kirwan, John and Tana Sandefur and 200 visitors and friends of the wetland project in attendance (Figure 5).

Teaching, Research, and Service

Teaching

Integrating wetland research with University teaching has been an emphasis at the Olentangy River Wetland Research Park since its inception. From the time that a Natural Resources graduate seminar class in 1991 helped to design the project, dozens of formal courses involving thousands of students have made use of the site for ecological or other projects related to wetlands or the river. These formal courses include classes on wetlands, water quality, ecological engineering, anthropology, architecture, environmental impact analysis, animal ecology, ornithology, and forestry. Eleven OSU classes involving almost 600 students used the site in 1998 (Table 1).

Research

Since the wetland project first began in 1992 and especially since the two 1-ha basins were flooded on March 4, 1994, dozens of research projects have been initiated on the project by graduate and undergraduate students and post-docs from Ohio State University and elsewhere. Results of those research projects are presented annually in these annual reports. A total of 30 students have completed dissertations, master's theses, or honor's undergraduate theses with partial or full use of the Olentangy River Wetland Research Park since 1992 (Table 2). While most student are from Ohio State, there have been 4 students from Europe (two from UK, two from Denmark) who collected thesis data at the ORWRP. Dozens of organizations in addition to Ohio State have collected data or conducted research at the ORWRP.

As a result of the ORWRP, almost $1 million in research funding to The Ohio State University Research Foundation (OSURF) has been secured in the past three years (Table 3).

Service

Interest by the public continues to grow. We had 74 tours or presentations on the Olentangy River Wetland Research Park in 1998 to over 2,500 individuals (Tables 4 and 5). The number of tours represents about the same number of tours in 1997 (81). Some of those taking the tour were well-known scientists and engineers (Table 5).

We also sponsored, in cooperation with the undergraduate Council on Student Affairs and the Department of

Figure 3. Scenes of Olentangy River city bikepath as it passes through the Olentangy River Wetland Research Park. Two bridges and about 0.5 mile of bikepath were constructed at the site in 1998.

Figure 4. Artist's sketch of Sandefur Wetland Pavilion. Construction began on this facility at the Olentangy River Wetland Research Park in 1998.

Recreational Sports Intermural office, the first "Haunted Swamp" at the wetlands (Figure 6). Almost 600 visitors participated. Events included costume judging for school-age children in the afternoon and a haunted swamp hay ride, complete with 7 scary scenes, in the evening.

Publicity

The Olentangy River Wetland Research Park was publicized 12 times in 1998 in several newspaper articles and on television and radio broadcasts (Table 6).The Columbus Dispatch featured articles about the wetlands four times during 1998, including an editorial about the Spring-Sandusky project which described the ORWRP as "an exceptional program, which specializes in the most effective and biologically sound way to redevelop wetlands". The Sandefur Pavilion groundbreaking event was covered in several campus and local publications.

The ORWRP also appeared in national publications in 1998. A short television program highlighting the site, entitled "Cutting Edge Technology Report: Eco-restoration today," aired on the Discovery Channel in September. In December, an article written about the ORWRP was distributed to 600,000 readers in the National Wildlife Magazine. Copies of all the articles published on the site in 1998 are given in the Appendix of this annual report.

The Plan

The Master Plan

Substantial progress has been made on this project for the past 7 years. Phase 2 was essentially completed except for completion of the Sandefur Pavilion and the plant greenhouse, both of which are being completed in 1999. Phase 3 and the last phase of site development shown in the site master plan (Figure 7) calls for a wetland research/ education building. Substantial progress was made on planning this building project in 1998.

a.

b.

Figure 5. Scenes from the groundbreaking of the Sandefur Wetland Pavilion at the Olentangy River Wetland Research Park, October 16, 1998. a. Brutus Buckeye lectures on the planned pavilion. b. ribbon cutting with (l. to r.) William J. Mitsch, Director, ORWRP; William "Brit" Kirwan, OSU President; John and Tana Sandefur, principal donors for the pavilion; Jerry Pausch, Chair, ORWRP Advisory Committee; Bob Moser, Vice-President for Agricultural Administration, OSU; and Robert Roth, Assistant Director, School of Natural Resources, OSU. c. OSU graduate student Changwoo Ahn describes a mesocosm experiment to some groundbreaking participants.

c.

Figure 5. continued

Table 1. Formal OSU class use of Olentangy River Wetland Research Park, 1998.

Term	Course	Number of Students	Instructor
Winter 1998			
	NR 979B Advanced Wetland Ecology	7	Mitsch
	NR 760 Ecosystem Modelling	20	Mitsch
	NR 567 Environmental Education	20	Fortner
	NR 200 Ecosystem Management	70	Johnson
Spring 1998			
	NR 355 Water Quality Management	100	Wang
	NR 200 Ecosystem Management	200	Wiltz
	LARCH 323/626 Landscape Construction: Water in the Landscape/ Landscape Structures	30	Breedon
Autumn 1998			
	NR 355 Water Quality Management	35	Traina
	NR 725 Wetland Ecology	41	Mitsch
	Zoology 661 Wildlife Biology	20	Harder
	Entomology 660 Advanced Economic Entomology	10	Horn

Table 2. Theses and dissertations completed at least partially at the Olentangy River Wetland Research Park.

The Ohio State University

Undergraduate honor's theses

- **Erika A. Filippi** "The role of soil organic matter on denitrification potential in newly created wetlands" Natural Resources (1998)
- **Bonnie F. Elfritz** "A comparison of natural wetlands with a constructed wetland using the Floristic Quality Assessment Index" Natural Resources (1998)
- **Kimberly K. Schamp** "Groundwater patterns before and after wetland construction at the Olentangy River Wetland Research Park" Natural Resources (1997)
- **Nicole L. Vorwerk** "Comparison of three years of pH values between planted and unplanted wetlands at the Olentangy River Wetland Research Park" Natural Resources (1997)
- **Rainie D. Gardner** "Fish recruitment in the Olentangy River constructed wetlands" Natural Resources (1997)
- **Tonya Cheek** "Effect of fish on wetland water quality" Natural Resources (1996)
- **Andrew W. Wehr** "Early water quality of created wetlands at the Olentangy River Wetland Research Park" Natural Resources (1995)
- **Michael E. Berkal** "Hydrology and water chemistry of the Olentangy River in Worthington (Franklin County), Ohio, and their potential effects on a future constructed wetlands facility downstream in Columbus, Ohio" Natural Resources (1992)
- **Douglas G. Stuart** "Intensive water quality sampling in two constructed riparian wetlands" Natural Resources (1992)

Ph.D. dissertations

- **Douglas J. Spieles** "Nutrient retentionand macroinvertebrate community structure in constructed wetlands receiving wastewater and river water" Environmental Science Graduate Program (1998)
- **Randall J.F. Bruins** "Modeling of flooding response and ecological engineering in an agricultural wetland region of Central China" Environmental Science Graduate Program (1997)
- **Neal E. Flanagan** "Comparing ecosystem structure and function of constructed and naturally occurring wetlands: Empirical field indicators and theoretical indices" Environmental Science Graduate Program (1997)
- **Robert W. Nairn** "Biogeochemistry of newly created riparian wetlands: evaluation of water quality changes and soil development" Environmental Science Graduate Program (1996)
- **Naiming Wang** "Modelling phosphorus retention in freshwater wetlands" Environmental Science Program (1996)
- **Paul E. Weihe**,"Colonizing and introduced vegetation in created riparian wetlands: Establishment during the first two growing seasons" Environmental Science Graduate Program (1996)

Master's theses

- **Sarah K. Harter** "Patterns of short-term sedimentation in a freshwater created marsh" Natural Resources (1999)
- **Sharon A. Johnson** "Effects of hydrology and plant introduction on first-year macrophyte growth in a newly created wetland" Natural Resources (1998)
- **Lisa J. Svengsouk** "First-year response of *Typha latifolia* L. and *Schoenoplectus tabernaemontani* (K.C. Gmel.) Palla to nitrogen and phosphorus additions in experimental mesocosms" Environmental Science Graduate Program (1998)
- **Kathleen D. Metzger** "Self-design of a fish community in a created riparian freshwater marsh: A simulation model" Environmental Science Graduate Program (1997)
- **John S. Koreny** "Hydrology of a constructed riparian wetland system: Characterization and predictive modeling" Environmental Science Graduate Program (1996)
- **Uygar Özesmi** "A spatial habitat model for the marsh-breeding red-wing blackbird (*Agelaius phoeniceus*) in coastal Lake Erie wetlands" Environmental Science Graduate Program (1996)
- **Doreen M. Dudek** "Tree growth responses to streamflow in a bottomland forest in central Ohio" Natural Resources (1995)
- **Steven F. Niswander** "Functional analysis of a created in-stream mitigation wetland: hydrology, phosphorus retention, and tree growth" Natural Resources (1994)
- **Renée F. Wilson** "Progress and success of five mitigation wetlands in Ohio" Natural Resources (1995)
- **Karen M. Wise** "Evaluation of acid mine drainage control by a constructed wetland in southeastern Ohio" Natural Resources (1994)
- **Frank D. Voss** "Groundwater investigation of Ohio State University wetland site" Geodetic Science (1993)

Theses at Other Universities

- **Hojeong Kang** "The significance of enzyme activities in wetland biogeochemistry" University of Wales, UK (1999)
- **Pernille Mortensen** and **Pernille Lanzky** "Water quality improvement in a constructed wetland" Thesis, Royal Danish School of Pharmacy, Copenhagen, DENMARK (1996)
- **Rebecca Smith** "Nitrogen transfer in groundwater in the riparian zone of the Olentangy River, Columbus, Ohio" Thesis, Cambridge University, Cambridge, England, UK (1996)

Table 3. Extramural funding to Ohio State University Research Foundation at the Olentangy River Wetland Research Park, 1995-1998 to four Colleges at OSU.

RF #	Short title	Funding Source	College	Amount	end date
735542	Watershed wetland demonstration	Indian Lake Demo Project	FAES	$18,225	2/28/01
731631	Constructed wastewater wetland	SW Licking Co W&S District	FAES	$175,028	6/30/00
735457	Solving hypoxia in the Gulf of Mexico	NOAA/USEPA	FAES	$97,000	12/31/99
733247	Reuse of clean coal FGD material	Ohio Dept of Development	ENG	$387,669	10/31/99
733487	A mitigation wetland	Pine Grove, Inc.	FAES	$54,242	12/31/01
736809	Molecular biodegradation in wetlands	USDA	MAPS	$90,000	9/30/01
737009	Pesticide phototransformation in wetlands	NOAA	BIOL SCI	$150,000	7/31/00
	TOTAL			$972,164	

Development Support Through 1998

The Olentangy River Wetland Research Park has not used Federal or state funds but has instead been supported almost entirely through private donations to the University. Through December 1998, the equivalent of approximately $877,000 has been raised for the wetland project (Table 7). This amount includes $498,000 in cash, $19,300 toward the endowment, and an estimated $360,000 of in-kind contributions, mostly from corporations.

There were 149 identifiable donations in 1998 for a total of $98,839 (Table 7).

One of the most positive aspects of the development of this site is the growth in the number of donations, both from individuals and corporations. Corporations have accounted for 76% of the donations and individuals another 17% (Figure 8). Cash or in-kind donations have now been received from 51 corporations and other organizations (Table 8).

Major In-Kind Donations

In 1998, several substantial in-kind donations were received including a greenhouse frame from Greenhouse Aquatics, Inc. (est. $5,000), architectural fees from Maddox NDB for the new pavilion ($11,619) and a Geo-Tracker automobile from Mr. Lance Schneier ($9.905). The last is a 4-wheel-drive vehicle and was much appreciated by the researchers at the ORWRP (Figure 9).

A Research and Education Building

A wetland research and education building is needed on the site in the next 2 to 3 years to take full advantage of the campus wetlands and to relieve overcrowding of labs, offices, and research facilities on campus. Plans developed in 1997 to begin a fund raising effort for this building were solidified in 1998. A sketch of the facility, provided by Professor Yosef Marzeki's senior design class in the Knowlton School of Architecture, is shown in Figure 10. The building would house a state-of-the-art control room or "operations theater" where every physical, chemical, and biological change in the wetland could be monitored in real time by staff wetland scientists. It would also include a conference center for continuing education-type courses and University courses on wetlands. The building would also include faculty and student offices, wet-laboratories for water analysis, a soil-water-plant analysis prep room (mud room), a computer laboratory, and a major wetland library. Greenhouses for plant experiments could also be constructed adjacent to the building later. The cost of the research building was estimated by the University Architect's office in November 1998 to be $2.8 million (Table 9). Late in 1998 we sent a proposal to the Ohio Board of Regents for $1.4 million of this amount. Details of the grant we won will be included in the 1999 annual report.

Wetland Endowment

In addition to the capital needs described above, the natural ecosystems and site infrastructure at the ORWRP will require continual maintenance and upkeep. A goal of $1.3 million has been established for an endowment to this campus natural area in perpetuity. By the end of 1998, $19,285 has been raised in endowments for the site.

Summary

The Olentangy River Wetland Research Park has successfully integrated wetland research with University teaching and service through its first eight years. The site has been used by thousands of students and campus visitors for formal and informal learning, and has attracted over $2 million to the campus in gifts, grants, and contracts. Activity in teaching, research, and service has increased every year as has support for the project. The Sandefur Wetland Pavilion and the city's bike path, both of which were worked on in 1998, make the site much more accessible to the public. There are only two major projects that remain from the master plan started in 1991:

1.funding and construction of a wetland research building, and

2. completion of an endowment to allow the site to be managed in perpetuity.

Table 4. Tours and presentations of the Olentangy River Wetland Research Park, 1998

Date	Organization	Est. Number
January 8	Leslie Hunter, prospective graduate student	1
February 20	Youngstown State University students	20
February 24	Julie Graycheck, Bishop Hartley H.S.	1
February 27	Sarah Harris, prospective graduate student, & mother	3
March 11	TAG Program	25
March 12	Columbus State University Biology Class	9
April 1	Denison University class	20
April 2	Boy Scout Troop #36	20
April 3	ODOT officials	10
April 17	Janice Gilbert	1
April 25	Earth Day ORW clean up crew	7
April 30	South H.S. Biology class	40
May 5	1st Community Village Senior Citizens Birders group	10
May 7	Wyandott Run Elementary, 2nd/3rd grade students	60
May 10	ITV-Penelope Douglas, et al.	2
May 16	Beavercreek Wetland Association, 10th Anniversary Celebration presentation	100
May 27	OSU Admissions/Financial Aid staff	45
May 30	OSU Development FOCUS group tour	35
May 30	Bill Resch & New Albany H.S. interns	7
June 3	Columbus State University Biology class	16
June 6	OSU Extension, Master Watershed Stewards	17
June 6	Friends of Lower Olentangy Watershed (FLOW)	35
June 24	Summit United Methodist Church day camp, children 8-11	16
June 24	Whetstone Gardens, lecture	25
June 26	Transportation & Citizens Advisory Committee	35
June 30	George Benua & Rotary Club; presentation & tour	2
July 2	Family Center, children 5-8	25
July 10	Franklin Co. Greenways Steering Committee	30
July 10	OSU Intramural Sports, Teresa Fournier	2
July 11	Audubon Society of Columbus	25
July 14	Soil & Water Conference tour	30
July 14	Office of Admissions, International/Graduate student visitors	5
July 16	Catholic Social Services	30
July 23	Family Center, children 9-11	16
June 24	Summit United Methodist Church day camp, children 5-8	17
July 31	Tri-State Master Gardeners	62
August 5	Childcare Unlimited, Big Walnut, Delaware, K-5th graders	36
August 6	Hoover YMCA daycamp, children 8-11	35
August 13	AG ADMIN: federal congressional assistants, OSU officials	25
August 20	Jack Waldock, Lynda Heyl	5
August 29	OSU Franklin Co. Alumni Club	25
August 29	Environmental Journalists	20
Sept. 1	Commercial and Real Estate Women(CREW)	30
Sept. 12	Entomology group	10
Oct. 9	Becky Bezair, 7th grader and mom	2
Oct. 12	St. Agatha 3rd grade	60
Oct. 16	ORW Open House & Pavilion Groundbreaking	200
Oct. 19	Immaculate Conception School 5th graders	50
Oct. 20	Barrington School 5th graders	30
Oct. 21	St. Agatha 3rd graders	70
Oct. 21	Bill Wahl & Parents Weekend organizers	5
Oct. 24	“Parents’ Weekend” tour	300
Oct. 30	“The Haunted Swamp”	600
Nov. 2	Sarah Johnson, prospective student, + mother	2
Nov. 4	high school recruits	35
Nov. 20	Ohio Wesleyan University seminar class	7
	total estimate	2,400

Table 5. Visiting scientists and professionals to the Olentangy River Wetland Research Park, 1998.

Date	Name	Organization
February 12	William L. Graf	Arizona State University
February 20	Courtenay Willis	Youngstown State University
March 12	Linda Roth	Columbus State University
April 1	Karl Kurfmacher	Denison University
April 6	David Buelow	ACOE
April 10	Jean-Claude Lefeuvre	University of Rennes, France
April 17	J. Brooks Breedon	OSU, Landscape Architecture
April 17	Volodmir Maltzew	Deputy Director, Ukraine Fisheries
May 7	Nancy Rabalias	Louisiana State University
May 7	Larry Brown	OSU, Agricultural Engineering
June 4	Bill Crumpton	Iowa State University
June 15	David Ward	Montana State University
July 17	Dr. Fuller	OSU Prof. Emeritus
August 10	visiting officials	Turkish Ministry of Agriculture
August 26	Audrey Rasmussen	
Sep 12	David Horn	OSU, Zoology
November 19	Serita Frey	Colorado State University
December 19	Josie Glausiwicz	Discover Magazine

Figure 6. Scene from the 1998 Haunted Swamp held on Halloween night at the Olentangy River Wetland Research Park. Over 600 people attended various events from 3 pm until midnight.

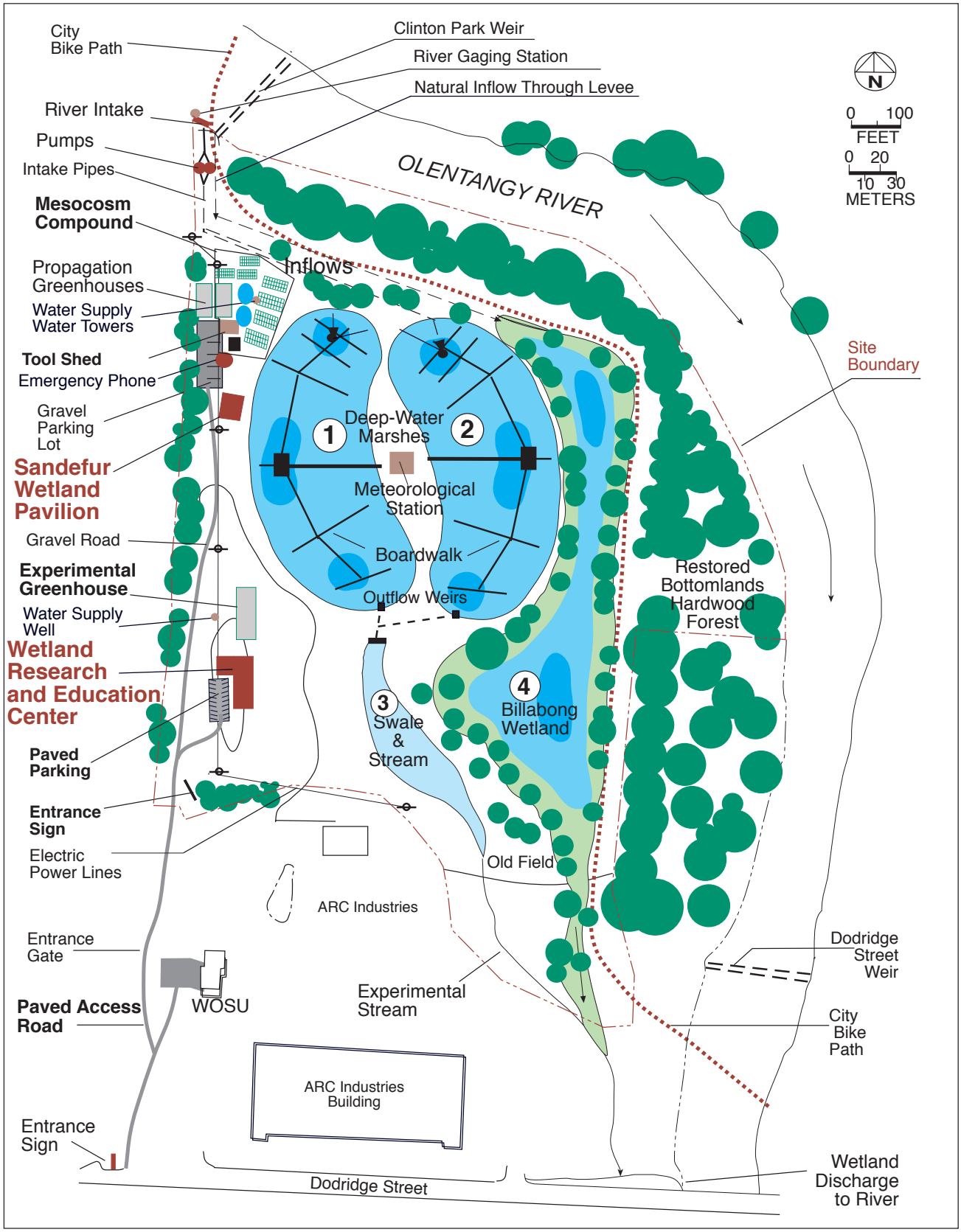
Table 6. Press and media coverage of the Olentangy River Wetland Research Park, 1998.

Date	Article Title or Event	Publication
January 13, 1998	"Road project could boost OSU wetlands"	Columbus Dispatch
January 14, 1998	"ODOT wants to develop OSU's wetland research park"	The Lantern
January 17, 1998	"Wetlands deal: Regulators should approve Spring-Sandusky"	Columbus Dispatch, Editorial
April 17, 1998	"Restored wetlands flunk real-world test"	Science
September 10,1998	"Cutting Edge Technology Report: Eco-restoration today"	ITV: Discovery Channel
October 15, 1998	"Wetlands tower to provide new views of wildlife"	Columbus Dispatch
October 17.1998	"Expansion to pump new life into wetlands"	Columbus Dispatch
October 19, 1998	"Alumni donate funds needed for OSU wetlands observation tower"	The Lantern
October 22, 1998	"A groundbreaking event"	onCampus
Nov/Dec 1998	"New pavilion to aid wildlife observation at Ohio State wetland park"	enVision
Fall 1998	"Sandefur gift to promote outdoor education"	OSU "Affirm Thy Friendship" Campaign Update
Dec/Jan 1998	"When it comes to building wetlands, scientists still can't fool mother nature"	National Wildlife

Table 7. Development support for the Olentangy River Wetland Research Park through 1998*.

year	number of donations	total amount of donations	in-kind donations	endowment donations	general cash donations
1998	149	$98,839	$28,624	$3,985	$66,230
1997	168	$78,228	$13,503	$300	$64,425
1996	146	$221,889	$200,283	$4,000	$17,605
1995	108	$97,184	$36,516	$11,000	$49,668
1994	86	$62,686	$48,744		$13,942
1993	46	$259,206	$25,606		$233,600
1992	7	$59,347	$6,327		$53,020
TOTAL	710	$877,377	$359,603	$19,285	$498,489

* support to date has been used to complete Phase 1 construction, to develop Phase 2 research and teaching infrastructure, and to establish an endowment for the site



OLENTANGY RIVER WETLAND RESEARCH PARK

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SITE MASTERPLAN

Figure 7. Master plan for the Olentangy River Wetland Research Park.

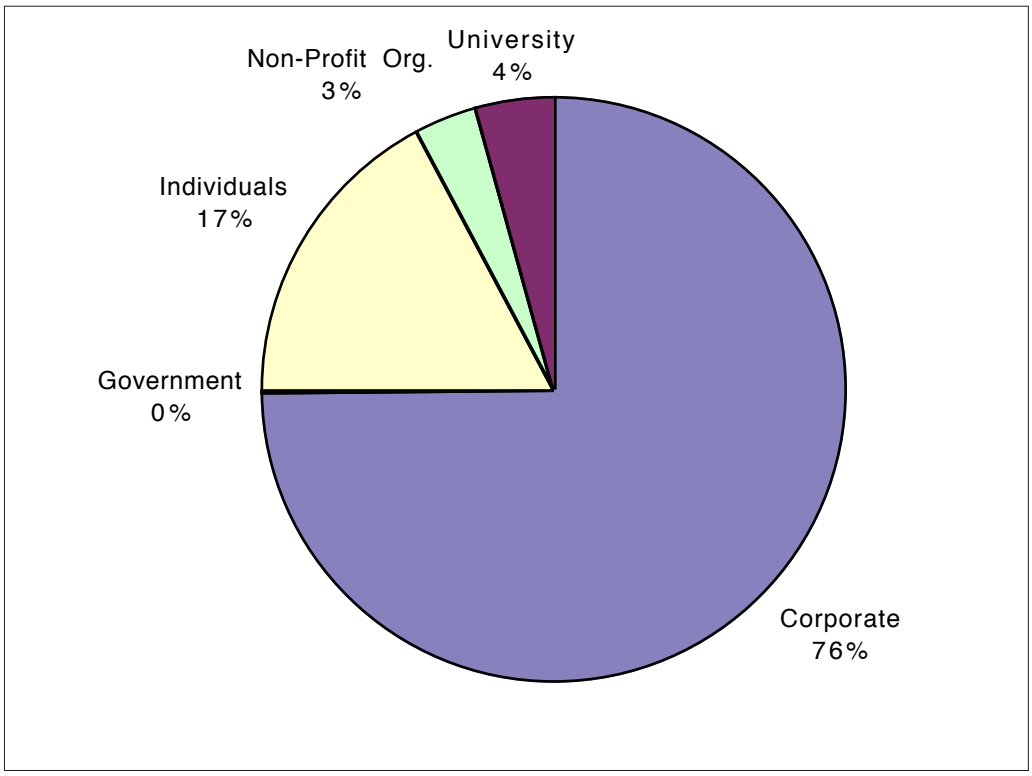

Figure 8. Distribution of sources of support for the construction and maintenance of the Olentangy River Wetland Research Park shown in Table 7 through 1998.

Table 8. Major Corporate and Foundation Supporters of the Olentangy River Wetland Research Park through 1998.

- Mid-American Waste Systems, Inc., Canal Winchester, OH
- Ohio Contractors Association, Columbus, OH
- Wisconsin Road Builders Association, Madison, WI
- U.S. Geological Survey, Columbus, OH
- Discflo Corporation, Santee, CA
- Tumut Gadara Corporation, Columbus, OH
- Kokosing Corporation, Fredricktown, OH
- BBC&M Engineering, Inc., Dublin, OH
- Bischoff & Associates, Inc., Columbus, OH
- Consoer Townsend Envirodyne Engineers, Chicago, IL
- The Heffner Fund, Cleveland, OH
- George J. Igel & Co., Inc., Columbus, OH
- Logan Aluminum Inc., Russelville, KY
- Ohio Geological Survey, ODNR, Columbus
- The O.M. Scott Company, Marysville, OH
- Owens-Corning, Granville and Toledo, OH
- Paul Peterson Company, Columbus, OH
- Rickerbacker Air National Guard, Columbus, OH
- U.S. Geological Survey, Columbus, OH
- The Bill and Edith Walter Foundation, Columbus, OH
- Woodward-Clyde Consultants, Wayne, NJ
- MPW Industrial Services, Inc. Hebron, OH
- The Lorenz Equipment Company, Columbus, OH
- Alban Equipment Company, Columbus, OH
- The Jerry B. Pausch Trust, Northfield, OH
- National Audubon Society of Columbus
- Ohio Lake Management Society, Twinsburg, OH
- Environmental Education Council of Ohio, Inc., Newark, OH
- Soil and Water Conservation Society, Columbus, OH
- City of Dublin, Dublin, OH
- Borror Corporation, Dublin, OH
- Project Management Institute, Plain City, OH
- The Holden Arboretum, Mentor, OH
- Hancor Inc., Findlay, OH
- American Society of Civil Engineers-Cleveland Section
- YSI Incorporated, Yellow Springs, OH
- Fairfield County Soil & Water Conservation District
- Eli Lilly & Co. Foundation, Indianapolis, IN
- Nielsen Ground Water Science, Inc., Galena, OH
- Northwest Garden Club, Columbus, OH
- Plain Local School District, New Albany, OH
- Van Nostrand Reinhold Publishers, New York, NY
- Grandview Garden Club, Grandview, OH
- American Society of Civil Engineers-Central Ohio Section
- Environmental Concern, Inc. St. Michael, MD
- Columbus Zoological Park, Columbus, OH
- Cooke Consulting, Inc., Columbus, OH
- Indian Lake Hydrologic Unit, Indian Lake, OH
- National Wildlife Federation, Washington, DC

Figure 9. Geo-Tracker donated to the Olentangy River Wetland Research Park in 1998.

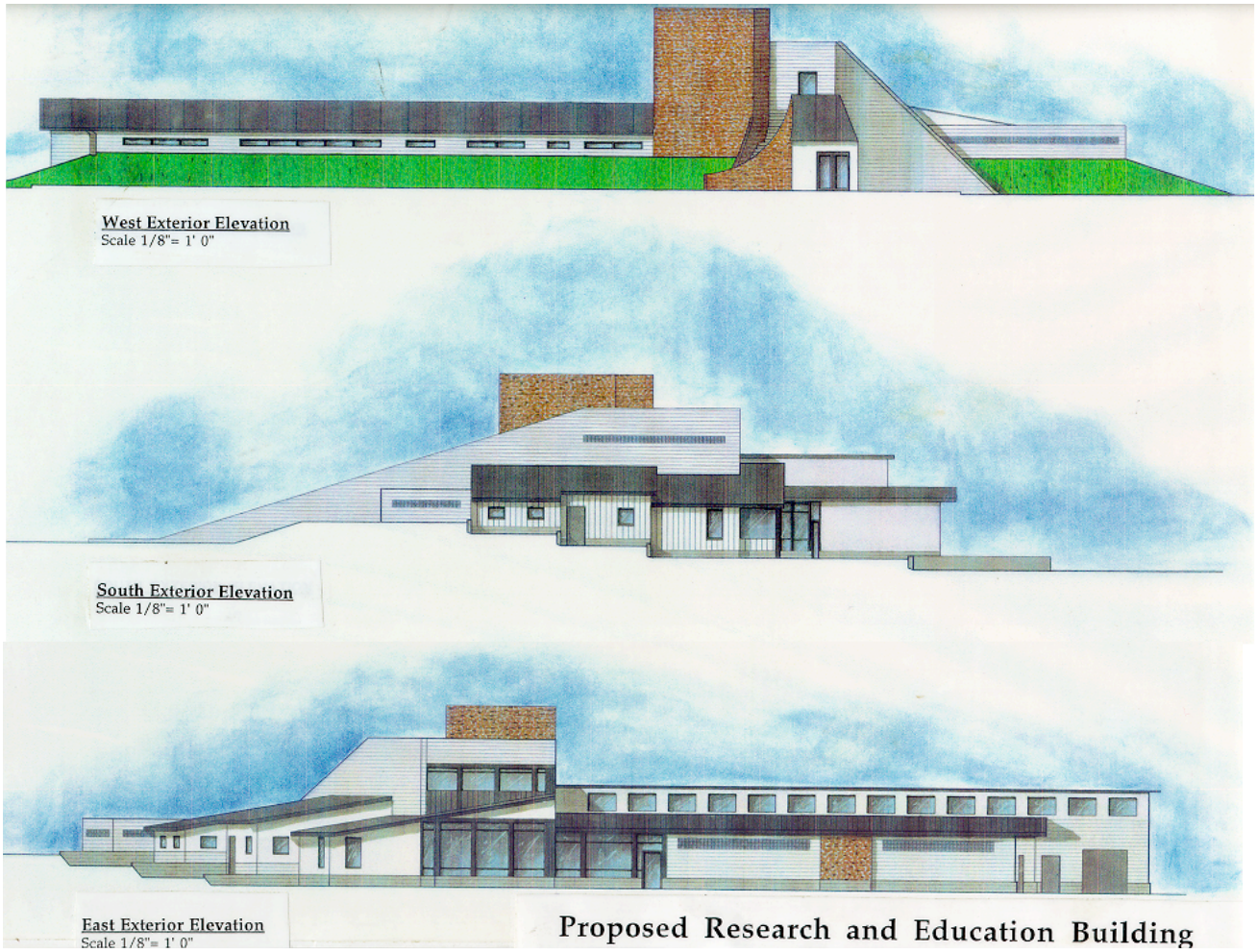

Figure 10. Architect's sketch of west, south, and east exterior elevations of proposed research and education building to be developed at Olentangy River Wetland Research Park. Sketches by students from Knowlton School of Architecture, The Ohio State University.

Table 9. Cost estimate for wetland research and education building, Olentangy River Wetland Research Park shown in Figure 10. *

Construction Costs	$1,766,151
Movable Furnishings and Equipment (FFE)	470,262
Contingency	335,462
Design Fees	156,292
Artwork 1.0%	28,000
University Administration Fee	33,546
Bidding/Advertising/Permits/Miscellaneous	20,000
Total Project Cost	$**2,809,713**

* Estimate developed by Ohio State University Architect, November 1998